Bypass and Blending: Wet Weather Impacts at Treatment Plants

May 2017

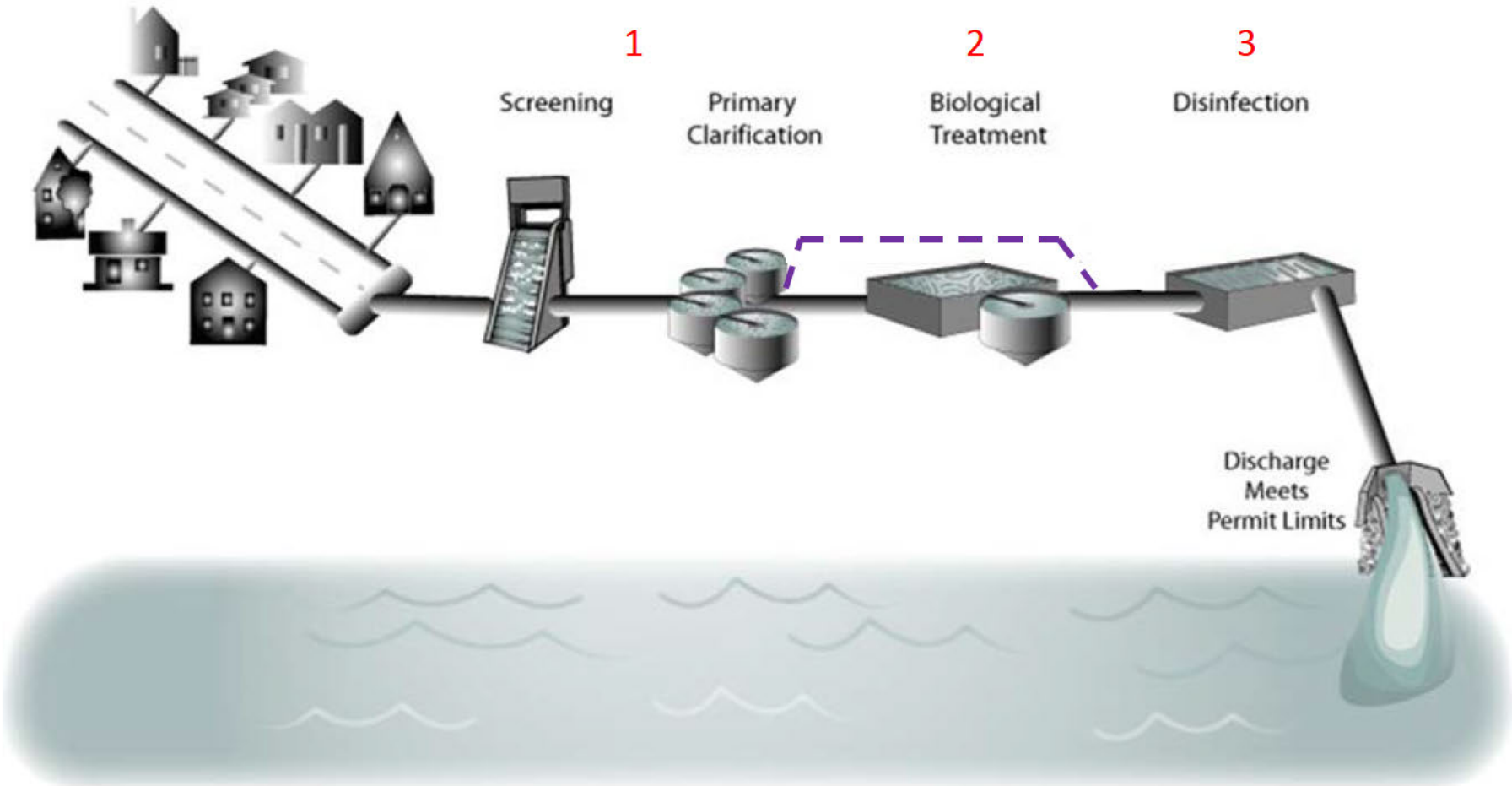
Purpose of Briefing

- Review critical infrastructure – collection systems and treatment plants.
- Review statutory provisions, regulations and court decisions.
- Identify concerns with blending.
- Discuss potential next steps.

Collection Systems

- Combined Sewers (CSS)
  - Designed to collect both stormwater and wastewater in a single pipe for treatment at a POTW.
  - Wet weather events (rain or snowmelt) may exceed the capacity of the collection system causing combined sewer overflows (CSOs).
  - 5% of POTWs nationally are serving CSSs.
- Separate Sanitary Sewers (SSS)
  - Designed to collect only wastewater for treatment at a POTW.
  - Rainwater and groundwater also enter SSS (especially during wet weather events) because of leaky pipes – know as infiltration and inflow (I/I). Poor maintenance can worsen problem (e.g., preventable leaks, diminished pipe capacity due to sediment build up).
  - 95% of POTWs nationally are serving SSSs.

Typical Wastewater Treatment Process



Typical 3 step process:

1. Primary treatment (settling) to remove solids
2. Secondary (biological) treatment to remove organics, solids and pathogens
3. Disinfection to inactivate pathogens

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Public Health Experts Forum on Health Risks of Blending

In June 2014, EPA engaged public health experts to provide EPA with appropriate health-based information associated with different engineering options available to address wet weather blending at POTWs served by SSSs. Several major themes emerged.

- Major knowledge gaps limit understanding of the health and environmental risks of blending.
  - Site specific risk assessments are needed.
  - Effluent and receiving water monitoring data during blending events are limited.
- **Bacteria Indicators** do not address the risks of viruses and other pathogens.
  - Disinfection greatly reduces the levels of bacteria indicators (which are measured) but may be **less effective** at removing viruses (which are not measured).
  - Secondary (biological) treatment units followed by disinfection remove viruses during dry weather but **not as effectively** during high flow wet weather events. Unfettered blending results in even higher levels of viruses being discharged.
- Blending scenarios that do not provide side-stream treatment that effectively removes solids before disinfection have higher levels of viruses in effluent.

CWA Sections 301(b) and 304(d) – Effluent Limitations Based Upon Secondary Treatment

Secondary Treatment Standards (40 CFR 133)

- The regulation applies to all POTWs and identifies the technology-based performance standards achievable based on secondary treatment for 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH.
- Secondary treatment standards for BOD_5 and TSS are in the form of 30-day average and 7-day average.

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EPA's Attempts to Clarify How the Bypass Provision Applied to Blending

- 1984 Bypass Regulations
  - In 1984 EPA reissued the bypass regulation to address the issue of bypasses that meet permit limitations.
  - The D.C. Circuit upheld the bypass regulation in 1987 (*NRDC, Inc. v. U.S. EPA,* 822 F. 2d 104 (D.C. Cir. 1987)).
- 2003 Draft Blending Policy
  - Would clarify that blending is not a bypass where specified criteria are met.
  - Strong opposition, including Appropriation Bill language prohibiting EPA from finalizing policy.
- 2005 Draft Peak Flow Policy
  - Would clarify that blending is a bypass that can only be approved in permit if there are no feasible alternatives.
  - Not issued.

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Next Steps